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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/526,021	09/07/2005	Philippe Alips	265422US6PCT	4207

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EXAMINER	
ELVE, MARIA ALEXANDRA	

ART UNIT	PAPER NUMBER
3742	

NOTIFICATION DATE	DELIVERY MODE
12/26/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/526,021	ALIPS ET AL.	
	Examiner	Art Unit	
	M. Alexandra Elve	3742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *11-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *11-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 February 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *2/25/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 11-12, 15-16 & 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito (JP 04-81290A) in view of Shirk (USPN 5,651,903) and Webber et al. (USPN 4,663,513).

Ito discloses a laser welding system in which an inert gas (30) follows the weld zone. The inert gas is injected through a cylindrical straight pipe (23) and the sensor (24) for detecting the weld area is deep within the straight pipe.

Ito does not specifically teach the type of detector, and the recording and analysis of the sensor data.

Shirk discloses a method and apparatus for monitoring laser weld characteristics. Photodectors (UV) generate multiple signals. Shirk further discloses the following:

> ...During the welding process, ultraviolet emissions radiate from the plasma at the weld location 22 and are measured by a light sensor 26 such as a focused photo-detector. The output of the light sensor 26 is amplified and electronically filtered by an internal signal processor 28. The signal processor 28 provides an amplified electrical signal indicative of the radiated ultraviolet emissions, i.e., light intensity, from the plasma at the weld location. The ultraviolet emissions signal is transmitted by means of a shielded cable 30 to a microcomputer 31.

At a sensing location 32 a predetermined distance from the beam delivery location 22, the temperature of the re-solidified weld puddle is measured by a temperature sensor 33 such as a focused infrared detector. The output from the temperature sensor 33 is passed by suitable fiber-optic cabling 34 to a detector/amplifier 35. The detector/amplifier 35 comprises an optical detector that converts the detected infrared light into an electrical signal. An amplifier of the detector/amplifier 35 amplifies the electric signal indicative of the infrared light which is, in turn, an electric signal indicative of the weld temperature at the sensing location 32. This electrical temperature signal is applied through a noise filter 36 to the microcomputer 31. The noise filter 36 includes a capacitor 37 and a resistor 38.

The microcomputer 31 may be of conventional design and includes an internal analog-to-digital converter 42 which is supplied with clock pulses from a clock 44. The analog-to-digital converter 42 receives the amplified signal indicative of the ultraviolet emissions from the internal signal processor 28 and the amplified and filtered signal indicative of the weld temperature from the detector/amplifier 35. The digital values of these signals are supplied to a central processing unit ("CPU") 46 of the microcomputer 31 by way of a memory buffer 48. The CPU 46 stores the received values of these two signals in a storage device 50, such as a hard disk drive. A light intensity waveform and other data may be displayed under control of the CPU 46 by means of a conventional display unit 52 such as cathode-ray tube.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Ito using a UV photodetector the output of which is filtered, amplified and recorded, as taught by Shirk because it characteristics the laser welding process (machining and so forth).

Webber discloses the method and apparatus for monitoring laser processes (welding, cladding, hardening, annealing and so forth) using an IR detector. The signal is measured and compared to a predetermined range. The signal is feed to the controller which is coordinated with the machine tool controller. Multiple signals may be measured. An infrared radiation sensor is positioned along the line of sight and detects infrared radiation at detection points. To protect the infrared radiation sensor and provide effective detection, a sensor protector is used to protect the sensor from plasma, flame and contaminants. A fiber optic cable connects the sensor to an amplifier which in turn is operatively associated with suitable electrical connecting means and the machine tool controller. The output sensor is traced by a chart recorder and may or may not indicate a satisfactory weld.

It would have been obvious to one of ordinary skill in the art at the time of the invention to an IR sensor and protection as taught by Webber in the Ito system because the IR sensor is merely a type of sensor and the protection yields more accurate data recordings of the laser processing characteristics.

Claims 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito, Shirk and Webber as stated above and further in view of Hawkins et al. (USPN 4,855,564).

Ito discloses the sensor being placed deep within the inert gas tube and Webber discloses the protection of the sensor, but an actual reflecting plate is not taught.

Hawkins et al. discloses a laser welding system with the following:

FIG. 3 schematically illustrates the principle of operation of the transmitter detector 136 and the receiver detector 134. The receiver detector 134 is mounted near the output 98 of the transmitter 74. The transmitter detector 136 is mounted near the input 138 of the receiver 76. The low power beam 122 is directed towards the receiver 76 as shown in FIG. 3. The low power beam 122 is directed through the receiver detector 134 which includes a semi-transparent mirror 140. The mirror 140 allows a portion of the low power beam 122 to pass therethrough and cross the gap between the transmitter 74 and receiver 76. The transmitter detector 136 has a semi-transparent or partially reflecting window 142 which reflects a portion of the incoming low power beam 122 as reflected beam 144. The reflected beam 144 strikes the semi-transparent window or mirror 140 and is deflected as low power beam 146 toward the receiver photo detector 148. The receiver photo detector 148 produces an output signal which characterizes the alignment of the transmitter 74 with the receiver 76. When the partially reflecting window 142 is perpendicular to the incoming low power beam 122, which indicates that the transmitter 74 and receiver 76 are in alignment, the receiver detector 148 produces an appropriate signal.

The partially reflecting window (semi-transparent reflecting plate) 142 allows a portion of the low power beam 122 to pass therethrough and strike a transmitter photo detector 150, which produces a signal in response to the low power beam indicative of the position of the transmitter 74 with respect to the receiver 76. When the transmitter 74 is aligned properly with the receiver 76, the output of the transmitter photo detector 150 produces an appropriate signal. The front surface 149 of the receiver photo detector 148 is slanted, as shown, in order to scatter any light 151 which may otherwise be reflected in the optical path of the system described in FIG. 3. Similarly, the front surface 153 of the transmsitter photo detector 150 is slanted in order to scatter light 155.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use a protective plate/window which semi-transmits, as taught by Hawkins et al. in the Ito laser system because it protects the sensor, yielding more accurate data and better quality laser processing.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ito, Shirk and Webber as stated above and further in view of Usui (USPN 5,221,823).

Ito discloses the sensor being placed deep within the inert gas tube and Webber discloses the protection of the sensor, but leak tight partition is not taught.

Usui discloses a laser machining apparatus for welding and cutting which the following configuration:

> … when the beam duct is hermetically sealed, the control apparatus 37 is able to control the inner pressure of the beam ducts to be a little higher than the outside pressure by detecting the inner pressure using the pressure sensor 35. The above construction prevents the fumes and dust from entering into the beam ducts.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Ito with hermetic sealing of the sensor as taught by Usui because the sensor is protected yielding more accurate data and better quality laser processing.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Alexandra Elve whose telephone number is 571-272-1173. The examiner can normally be reached on 7:30-4:00 Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tu B. Hoang can be reached on 571-272-4780. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

December 20, 2008.

/M. Alexandra Elve/
Primary Examiner, Art Unit 3742